CHAPTER 10

STUDY FINDINGS AND CONCLUSION

10.1 PRELIMINARY

This report addresses the environmental issues associated with the construction and operation of a proposed project that is a prescribed activity under Schedule 1 (S1) of the Environmental Quality (EIA) Order 2015 or the EQ(EIA)O 2015, thus is subjected to an Environmental Impact Assessment (EIA S1). The proposed project is referred to as the Construction and Completion of a Metals from Spent Catalyst Recovery Facility (SCaRF) at Gebeng Industrial Estate (GIE), Kuantan, Pahang. The philosophy of an EIA is to understand the proposed project, from the rationale for its inception, through its construction and operation, and to know the grounds and surroundings where the proposed project is to be located; and from these two sets of information, assess the potential impacts of the proposed project qualitatively and quantitatively, via countings, modellings, etc., on the environment, in particular the local environment. Knowing the potential impacts, mitigating measures are then proposed to ensure the potential impacts from the proposed project on the existing environment are not significant, in the short, medium and long term, and where possible, instead, to positively contribute to the conditions of the existing environment.

The same principle has been followed through for this EIA. Based on the results of this study, the following sectors of the environment could have some potential impacts from the project, whether they are significant or otherwise are presented below.

10.2 STUDY FINDINGS

10.2.1 Findings on Project Options

Having considered various alternative options: from site, socioeconomics, process and “No Project” option, it is found that the options decided for this SCaRF are the best possible, considering its location close to and within access to petrochemical and downstream industries, and with availability of clean gas fuel right in front of it; that the recovery of the highly valuable

Molybdenum and Vanadium metals would reduce mining for them while making Malaysia an exporter of the metals and reducing secure landfill requirement for spent catalyst disposal; that the chosen process has been technically, environmentally and commercially proven via the same plant in Ako City, Japan (Appendix 2) and that a “No Project” option would mean wastage of valuable metals and non-sustainable supply via mining.

10.2.2 Findings on Topography and Landuse around SCaRF

The Gebeng Industrial Estate (GIE) and thus the proposed SCaRF plot lies on a flat alluvial plain, the level of which has been raised to prevent flood and make the land suitable for industrial activities. In the GIE is located the heavy industries of Pahang. The growth of the GIE has led to demands for housing and services, with almost all typical township services now available in townships such as Baluk Makmur. For the establishment of SCaRF, there should be sufficient housing and facilities in the surrounding townships to cater to workers during construction and operation. The zoning plan for the Gebeng area will see more industries coming to the area, most of it to the west, north and east of the proposed SCaRF site, especially with the coming into operation in 2026 of the Kuantan International Airport and the Kuantan Port ECRL station.

10.2.3 Findings on Geology and Soil

The proposed project site is geologically stable, comprising of the Simpang and Beruas formations. Only groundwater extraction could jeopardise the underlying rock stability; however, such extraction is not expected here as the surrounding areas have many water bodies and the site has a potential secondary water source. The soil is originally peat, but has since, in 2011, been topped with loamy soil; and soil loss for existing condition has been calculated to be in “moderate” category.

10.2.4 Findings on Drainage and Flood

Sg. Baluk is about 10km long and without any potable water intake point (WIP) on it. Being a short river that discharges to the South China Sea, any large flow due to heavy rain can be expected to rapidly flow out to the sea if the drainage in the occupied areas is well designed. The platform for the industrial lots of Gebeng has been raised in 2011 since the monsoon flood experienced in 2010. Ever since then no flood had occurred on the raised industrial lots. Thus, it may be concluded that flooding at the proposed site is highly unlikely since the platform was raised and drainage improved in 2011, and will remain so provided the drainage is well maintained.

10.2.5 Findings of Air Quality and Air Dispersion Modelling

All ambient air quality parameters measured had recorded concentrations that were below the limits set by the MAAQS (2020), indicating still good air quality in GIE. Air dispersion modelling carried out has shown that with the air pollution controls (APCs) in place, during normal plant operation, the contribution of identified criteria air pollutants from the project to the surrounding environment is assessed to be minimal and insignificant at all identified off-site sensitive receptors.

10.2.6 Findings on Existing Water Quality and of Water Quality Modelling

Overall, the water quality is moderate with respect to organics and nutrients, mostly due to peaty soils in the area. With respect to industrial contribution in terms of pH, temperature and heavy metals, it is still not visible. Due to moderate values of DO, BOD and ammonia-N, the water quality index shows the river as slightly polluted at all points and polluted at WQ4, which is upstream of the SCaRF location. The water quality modelling indicates that due to the very small flowrate from the proposed SCaRF project as compared to the Sg. Baluk river flowrate, the proposed SCaRF discharge is well dissipated upon reaching Sg. Baluk and has insignificant contribution to the water quality of Sg. Baluk.

10.2.7 Findings on Noise and Vibration

Measured noise values gave low to moderate noise levels, the higher values most probably due to vehicular traffic, such as motor bikes, due to locations next to roads. Nevertheless, none of the values measured at all points were of category Noisy or ≥ 80 dBA (Occupational Safety and Health (Noise Exposure) Regulations 2019.

Vibration data for surrounding areas showed low vibration values ranging between 0.250 to 2.920 mm/s, all well below the safe limit of 8 mm/s for Sensitive Structures, showing that the proposed site is safe for sensitive equipment or structures

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10.2.8 Findings on Flora and Fauna

The proposed site being in an industrial area, with the lot being of filled to raise the platform to prevent flood, the flora and fauna at the site is not notable. Nevertheless, the area is close to the Baluk forest area and the river reserve is still largely intact; thus, there are present several notable flora species (such as balau and meranti) and bird species as these can fly. Conservation of these, notably of those in the still largely intact river reserves, will be environmentally beneficial for habitat protection as well as river water quality protection. The Sg. Baluk is still healthy in terms of phytoplankton, zooplankton and fish life, with reasonable varieties of fishes. Although the species are common river species categorised as of Least Concern under IUCN; the varieties indicate a still healthy environment, and holds promise for Sg. Baluk to be an angler's spot.

However, being the major drainage river in Gebeng, the probability of pollution remains; thus, the importance of protecting the river reserve as a protection barrier against pollution and as nesting sites for fish juveniles.

10.2.9 Findings on Socioeconomy

The largest age groups are 30 – 39 years at 23.3% and 40 – 49 years at 28.3% that is the employable age groups, thus in-line with the proposed project's aim to employ locals, and for them to recide in the local areas. Most have a certain degree of formal education, with most up to secondary school (74.2%) and tertiary education at 1.7%. Family size is mostly small with 2-3/family at 50%, indicating that a family house may still accommodate additional members and housing is not critically short. Employment wise, a large % is working as fishermen, which is an informal work category (35%) opening them to employment at work sites, etc, in-line with the proposed project's aim of employing locals and not importing foreign workers. Accounting for the small household, level of education and large work group being fishermen, the majority of households (49.2%) has household income of RM2,001 and RM3,000, which is regarded as moderately low. There was high acceptability of the proposed project, at 74.2%, while the Respondents hold onto high expectations of new jobs and infrastructural improvement. A potential improvement as proposed here is developing a river reserve cum nature park along Sg. Baluk, that would serve the locals, as well as attract eco enterprises in angling, boating, etc. This initiative may be taken up by GIE Park Management; with participations from the industries in the area as part of their Corporate Social Responsibility (CSR).

Healthwise the existing living conditions are relatively poor with high percentages of non-flush toilets and garbage burning as indicators. Nevertheless, health conditions are normal without prevalence of serious or strange illnesses and studies by KABPU (2022) on air quality in 5 biggest industrial areas in Malaysia has shown Gebeng as having lowest URTI compared to others.

10.2.10 Findings on Traffic

A review of present road facility and its ability to cater for current traffic demand was carried out to determine if any improvement need to be introduced. Traffic study has been carried out on Jalan Gebeng 2/7, Jalan Gebeng 1/11 (Jalan Qinzhou) and Jalan 101 (Gebeng Bypass) as these are the roads likely to have direct influence on traffic to/from the proposed Project site. From the roadway midblock performance and junction performance results, it is clear that the surrounding road network is currently performing at a very good LOS for both weekday and weekend. Generally, the traffic at these roads is operated in free flow. In addition, traffic would be affected only during the construction period, whereas during the operation, the heavy vehicle would be for dry spent catalyst transportation, with the most frequent for ARDS catalyst at only about 4 active

(transporting) weeks in 3 months, with about 8 trucks/day during the active weeks. Hence, the overall traffic in the Project Site is not sufficiently constrained to be of concern.

10.3 CONCLUSION

This project involves typical slow roasting of used catalyst to oxidise molybdenum (Mo) and vanadium (V) into soluble oxides so that they may be dissolved and separated from the main bulk of the used catalyst sediments. Thereafter the Mo and V solutions are enriched before the Mo and V are precipitated out. The whole process involves well known unit operations and should not pose significant environmental impacts if the processes are well managed at all times. The project proponent, Taiyo Koko, is a well established company in Japan, thus is the best choice for this kind of project. The studies and modellings carried out in this EIA study indicate insignificant impact to the environment due to the site being relatively small in size and effluent and gaseous emissions are well controlled, with the effluent flowrate being much smaller than that of the Sg. Baluk. The Mo and V are in increasingly high demands due to developments of high efficiency and capacity components for electric vehicles, wind turbines, etc., and are being mined, in China, South Africa, etc. causing environmental damages. This recovery by SCaRF from used catalyst available in Malaysia, using natural gas available on pipeline at the site (thus is a clean and safe process), will become a renewable source of these valuable metals. With mitigating measures as recommended so far in this TOR, it can be seen that the benefits from this proposed project will far outweigh the potential impacts. Socioeconomic surveys carried out has shown high acceptability of the process by locals, on the back of expectations of employment prioritising locals at both construction and operation stages, and of improved infrastructure and amenities for the locals.

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